Salt River Pima-Maricopa Indian Community (SRPMIC)

2010 AIR MONITORING NETWORK REVIEW

April 2011

Community Development Department (CDD)
Environmental Protection & Natural Resources (EPNR)
10005 East Osborn Road
Scottsdale, AZ 85256

INTRODUCTION

The Salt River Pima-Maricopa Indian Community (Community) has developed an air-monitoring network for measuring ambient concentrations of criteria pollutants and associated meteorological parameters. The operation of these Tribal Monitoring Sites (TMS) follows the United States Environmental Protection Agency (USEPA) State and Local Air Monitoring Sites (SLAMS) guidance documents and recommendations. This Annual Air Monitoring Network Review for 2010 is being submitted by the SRPMIC Environmental Protection & Natural Resources (EPNR) to the United States Environmental Protection Agency (USEPA) Region 9 as outlined in 40 CFR Part 58.10. In addition, changes made to the network design and special projects conducted during 2010 and a 3-year data summary are included in the document.

AMBIENT MONITORING NETWORK

The purpose of the SRPMIC air-monitoring network is to measure ambient concentrations of the selected criteria pollutants at various locations across the Community. These data are used to assess health and welfare effects and determine pollution source both on and off the Community. The criteria pollutants measured are ozone (O_3), Particulate Matter (PM_{10}) and Particulate Matter ($PM_{2.5}$); the meteorological parameters include wind speed, wind direction, sigma theta, ambient temperature, and ambient pressure. The collection of these data began in 2002 and continues to date. Six monitoring objectives and five measuring scales were used to develop the monitoring network.

OBJECTIVES

- Determine the highest concentrations expected to occur in the area covered by the network;
- Determine the representative concentrations in areas of high population density;
- Determine general background concentrations levels;
- Determine the extent of regional pollutant transport from populated area, in relation to secondary standards; and
- Determine the welfare-related impacts in more rural and remote areas.

SCALES

Scale	Defined Parameter (radius)
Micro	0 to 100 meters
Middle	100 to 500 meters
Neighborhood	0.5 to 4 kilometer
Urban	4 to 50 kilometers
Regional	10 to 100s of kilometers

DESCRIPTION

Four monitoring sites were operated by the SRPMIC during 2010 at four locations and for various durations and purposes. The site name, abbreviation, AQS Code and monitoring scale are included in Table 1; the location of each site, including the longitude/latitude and major cross-streets is presented in Table 2; the criteria pollutants monitored and the type of network each site represents is presented in Table 3; and the site instrumentation is presented in Table 4. The location of the Community is presented in Figure 1; the monitoring locations within the SRPMIC are presented in Figure 2. Photographs of the sites and associated data summaries are included at the end of this report.

Table 1: SRP-MIC Ambient Monitoring Sites

Site Name	Site Abbreviation	AQS Code	SCALE
Red Mountain	RM	04-013-7021	Urban
Senior Center	SC	04-013-7020	Neighborhood
Lehi Fire Station	LE	04-013-7022	Neighborhood
High School	HS	04-013-7024	Neighborhood

Table 2: Site Locations

Site	Latitude	Longitude	Location
RM	33^0 30.475′	111^0 45.277′	SR87/Arizona Canal
SC	33^0 29.294′	111^0 51.339′	Osborn/Alma School Roads
LE	33^0 28.472′	111^0 48.303′	Oak Street/Stapley Drive
HS	33^0 30.483′	111^0 50.268′	Chaparral Rd/Country Club Dr

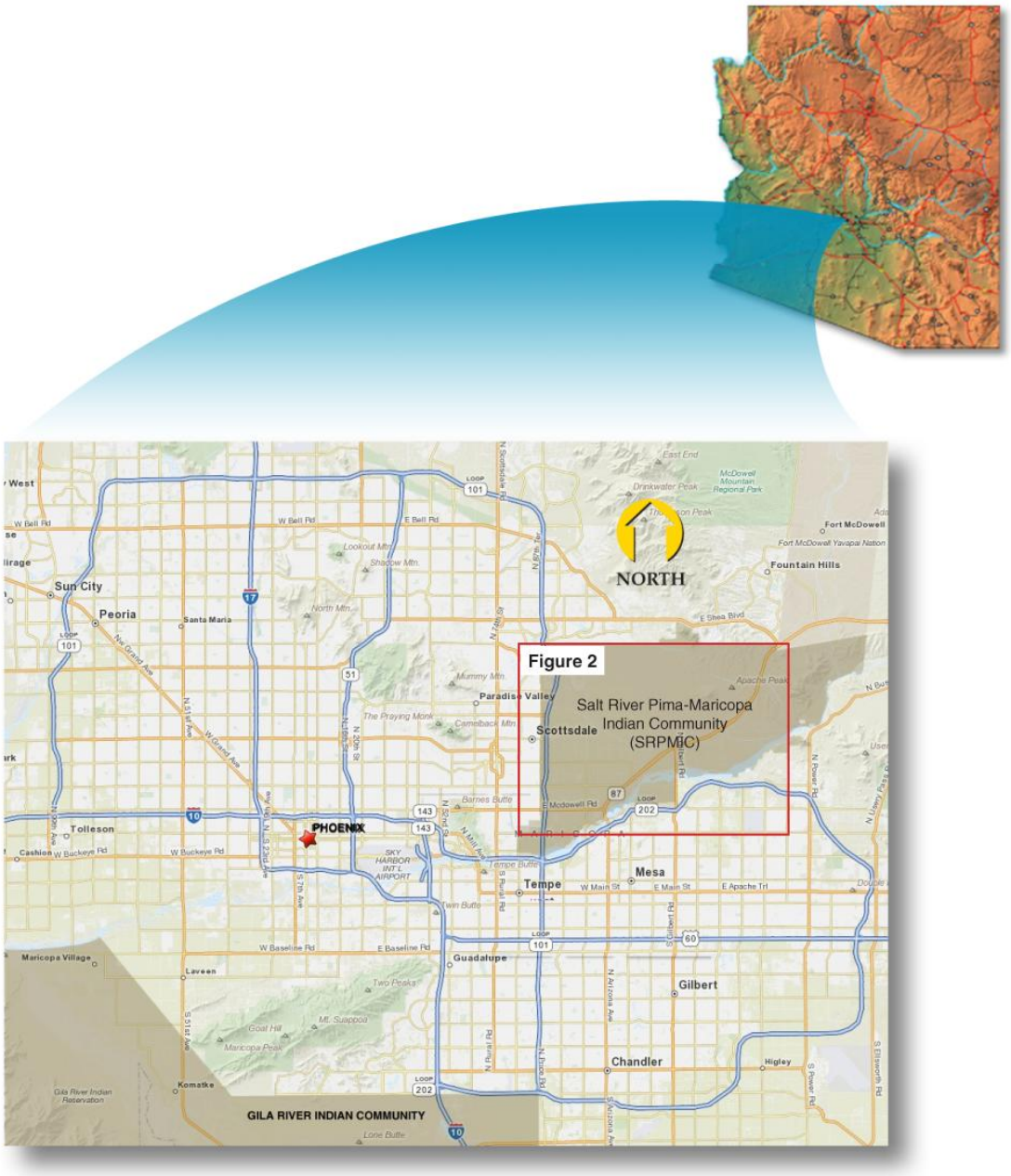
Table 3: Criteria Pollutants Monitored by Site/Network

Site Name	O_3	PM_{10}	$PM_{2.5}$
Red Mountain	**SLAMS**		
Senior Center	**SLAMS**	**SLAMS**	**SLAMS**
Lehi Fire Station	**SLAMS**	**SLAMS**	
High School	**SLAMS**	**SLAMS**	

Table 4: Site Instrumentation

Site ID	PM_{10}	$PM_{2.5}$	Ozone	Wind System	Ambient Temp	Ambient Pressure	Rain	Data Logger	Total
SC	2	2	1	1	1	1	1	1	10
RM			1	1	1	1		1	5
LE	1		1*	1	1	1	1	1	7
HS	1		1*					1	3
Total	4	2	4	3	3	3	2	4	25

* seasonal



Locator Map
Salt River Pima-Maricopa Indian Community
(SRPMIC)

Figure 1

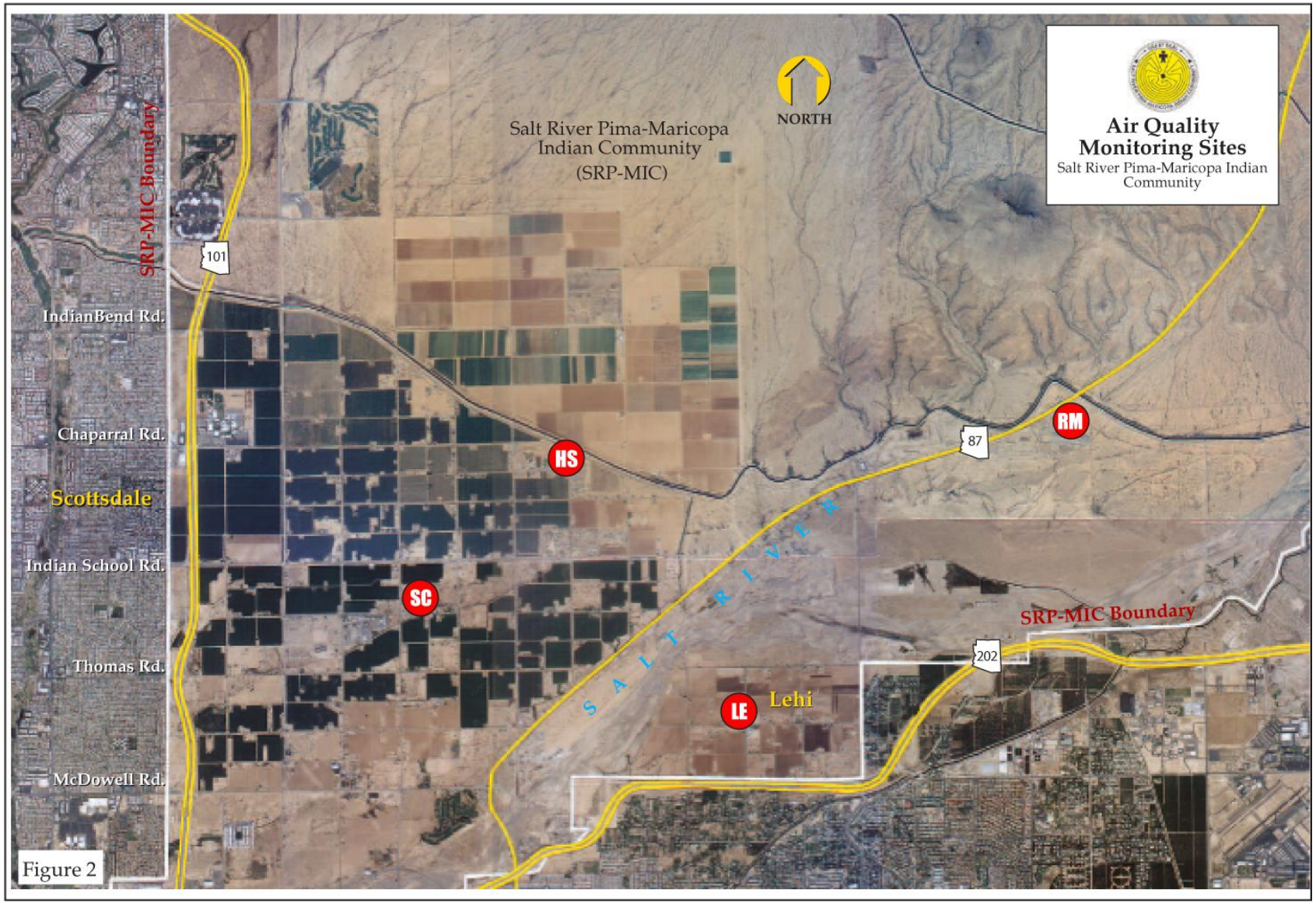

Air Quality
Monitoring Sites
Salt River Pima-Maricopa Indian Community
NORTH
Salt River Pima-Maricopa
Indian Community
(SRP-MIC)
SRP-MIC Boundary
101
IndianBend Rd.
Chaparral Rd.
Scottsdale
Indian School Rd.
Thomas Rd.
McDowell Rd.
HS
SC
RM
LE
87
202
SALT RIVER
Lehi
SRP-MIC Boundary

Figure 2

DATA SUMMARIES

CRITERIA POLLUTANTS

The Federal Clean Air Act (CAA) of 1970 established National Ambient Air Quality Standards (NAAQS) for six pollutants. These pollutants, referred to as the "Criteria Pollutants", include carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), sulfur dioxide (SO_2), and lead (Pb). Two Federal Standards exist for most of the criteria pollutants. The primary standard defines levels deemed ". . . necessary, with an adequate margin of safety, to protect the public health." The secondary standard defines levels ". . . necessary to protect the public welfare . . ." (40 CFR Part 50). The promulgation of these standards, however, does not prohibit any State or Tribal Community from establishing air quality standards that are more stringent. The Federal Standards are also subject to periodic review and revision as deemed necessary by the Administrator of the Environment Protection Agency (EPA).

The SRPMIC monitors criteria pollutants at various locations across the Community; not all pollutants are monitored at all locations. During 2010 four locations were operated for the measurement of ozone (O_3), PM_{10} and $PM_{2.5}$. The following discussion summarizes the SRPMIC network results in relation to the monitoring objectives of the State and Local Air Monitoring Stations (SLAMS).

Ozone (O_3)

During 2010, four ozone monitors operated at various locations during various intervals. One location operated continuously; one operated during two extended periods; and two operated seasonally during the year. Each location and operational period is listed in Table 5.

Table 5: Operational Schedule for O_3

Site Name	Duration
Red Mountain	January 1 – February 11 April 14 - December 31
Senior Center	January 1 – December 31
Lehi Fire Station	April 1 – November 1
High School	April 1 – November 1

One-hour Average Concentrations - Ozone

One-hour concentrations of ozone during 2010 were moderate; no exceedance of the one-hour ozone standard was recorded. A summary of the one-hour concentrations obtained at the four locations is presented in Table 6; the distribution of the one-hour concentrations is presented in Table 7.

Table 6: Ozone 1-Hour Summary

Site	Max. (ppm) Date Time	2nd High (ppm) Date Time	3rd High (ppm) Date Time	4th High (ppm) Date Time	Number Of Exceedances	Number of Samples
RM	0.096 6/23 1700	0.094 9/30 1500	0.093 6/22 1600	0.092 5/27 1600	0	7238
SC	0.091 9/30 1400	0.090 6/23 1600	0.086 6/22 1500	0.085 5/27 1500	0	8729
LE	0.092 9/30 1400	0.086 6/23 1700	0.085 6/22 1600	0.081 5/27 1600	0	5142
HS	0.088 6/23 1600	0.087 9/30 1300	0.087 6/22 1500	0.086 5/27 1600	0	5146

Table 7: Ozone Distributions

Number of 1-Hour Average Values (ppm)

Interval:	*0.00 to 0.04*	*0.05 to 0.08*	*0.09 to 0.12*	*0.13 to 0.16*	*0.17 to 0.20*	*0.21 to 0.24*	*0.25 to 0.28*	*>0.28*
Site								
RM	5154	2069	15	0	0	0	0	0
SC	6625	2096	8	0	0	0	0	0
LE	3398	1738	6	0	0	0	0	0
HS	3298	1840	8	0	0	0	0	0

Eight-hour Average Concentrations - Ozone

Eight-hour average concentrations of ozone were moderate to high. There were nine exceedances of the eight-hour ozone standard and one violation of the standard. A summary of the eight-hour concentrations is presented in Table 8; the distribution of the concentrations is presented in Table 9.

Table 8: Ozone Eight-Hour Summary

Site	Max. (ppm) Date Time*	2nd High (ppm) Date Time*	3rd High (ppm) Date Time*	4th High (ppm) Date Time*	Number Of Exceedances	Number of Samples
RM	0.081 6/22 1100	0.079 9/30 1000	0.079 6/23 1100	0.077 6/24 1100	4	7261
SC	0.078 6/23 1000	0.076 6/22 1100	0.074 9/30 1000	0.073 5/27 1000	2	8760
LE	0.080 9/30 1000	0.075 6/23 1100	0.073 6/22 1100	0.070 9/29 1000	1	5155
HS	0.076 6/22 1100	0.076 6/23 1000	0.075 9/30 1100	0.073 5/27 1100	2	5155

***Time** – Time is beginning hour (Mountain Standard Time)

Table 9: Ozone Distribution

Number of Eight-Hour Average Values (ppm)

Interval:	*0.00 to 0.04*	*0.05 to 0.08*	*0.09 to 0.12*	*0.13 to 0.16*	*0.17 to 0.20*	*0.21 to 0.24*	*0.25 to 0.28*	*>0.28*
Site								
RM	5287	1974	0	0	0	0	0	0
SC	6964	1796	0	0	0	0	0	0
LE	3571	1584	0	0	0	0	0	0
HS	3450	1705	0	0	0	0	0	0

Particulate Matter (PM_{10})

During 2010, PM_{10} samplers operated at three locations during various intervals. One of the locations operated continuously through the year; two were operated during consecutive months. Each location and operational period is listed in Table 10.

Table 10: Operational Schedule for PM_{10}

Site Name	Duration
Senior Center	January 1 – December 31
Lehi Fire Station	January 1 – December 31
High School	January 1 – December 31

Twenty-four hour average concentrations of PM_{10} were low during 2010; there was no exceedance of the 24-hour standard, but one site was in violation. A summary of the 24-hour average concentrations is presented in Table 11; the distribution of the concentrations is presented in Table 12.

Table 11: PM_{10} Twenty-Four Hour Average Concentration Summary

Site	Max. (ug/m^3) Date	2nd High (ug/m^3) Date	Number of Exceedances	Annual Average (ug/m^3)	Number of Samples
SC – P*	59 8/6	57 12/10	0	26.5	60
SC – C**	61 12/10	59 8/6	0	26.2	60
LE	55 5/20	49 6/1	0	25.0	58
HS	75 9/17	64 7/7	0	31.2	52

*Primary Sampler
** Collocated Sampler

Table 12: PM_{10} Twenty-Four Hour Average Concentration Distributions

	Number of Twenty-Four Hour Average Concentrations (ug/m^3)								
Interval:	***0 to 25***	***26 to 50***	***51 to 75***	***76 to 100***	***101 to 125***	***126 to 150***	***151 to 175***	***176 to 200***	***>200***
Site									
SC – P*	28	30	2	0	0	0	0	0	0
SC – C*	28	29	3	0	0	0	0	0	0
LE	31	26	1	0	0	0	0	0	0
HS	18	28	6	0	0	0	0	0	0

*Primary Sampler
** Collocated Sampler

Particulate Matter ($PM_{2.5}$)

During 2010, $PM_{2.5}$ samplers operated at one location; the operational period is listed in Table 13.

Table 13: Operational Schedule for $PM_{2.5}$

Site Name	Duration
Senior Center	January 1– December 31

Twenty-four hour average concentrations of $PM_{2.5}$ were low during 2010. A summary of the 24-hour average concentrations is presented in Table 14 for those concentrations obtained on a 6-day schedule; the distributions of the concentrations for the corresponding schedules are presented in Table 15.

Table 14: $PM_{2.5}$ Twenty-Four Hour Average Concentration Summary

6-Day Schedule

Site	Max. (ug/m^3) Date	2nd High (ug/m^3) Date	Number of Exceedances	98th Percentile Value	Annual Average (ug/m^3)	Number of Samples
SC – P*	9.6 12/10	9.1 12/4	0	9.1	5.4	59
SC – C**	9.9 12/4	9 12/10	0	9.0	5.5	59

*Primary Sampler
** Collocated Sampler

Table 15: $PM_{2.5}$ 24-Hour Average Concentration Distributions

6-Day Schedule

Number of 24-Hour Average Concentrations (ug/m³)

Interval:	*0 to 15*	*16 to 30*	*31 to 50*	*51 to 70*	*71 to 90*	*91 to 110*	*>110*
Site							
SC - P	59	0	0	0	0	0	0
SC - C	59	0	0	0	0	0	0

DATA COMPLETENESS

A summary of the annual data completeness for the criteria pollutants monitored during 2010 is presented in Tables 16-18. These tables represent the number of samples collected during each site's operation versus the number of scheduled samples during each site's operation; the number of scheduled samples does not necessarily reflect one year of monitoring. Of the four sites, only the Senior Center (SC) location has a full year of data.

Table 16: Ozone (O_3)

Interval Site	Number of Actual Samples	Number of Scheduled Samples	Data Completeness (Actual/Scheduled)
One-Hour			
RM*	7238	7266	99.6%
SC	8729	8760	99.6%
LE**	5142	5160	99.6%
HS**	5146	5160	99.7%
Eight-Hour			
RM*	7261	7261	100.0%
SC	8760	8760	100.0%
LE**	5155	5155	100.0%
HS**	5155	5155	100.0%
TOTAL	52586	52677	99.8%

*Partial Year

** Seasonal

Table 17: Particulate Matter (PM)

PM_{10} Interval Site	Number of Actual Samples	Number of Scheduled Samples	Data Completeness (Actual/Scheduled)
1 in 6 days			
SC – P*	60	61	98.4%
SC – C**	60	61	98.4%
LE	58	61	95.1%
HS	52	61	85.2%
TOTAL PM_{10}	230	244	94.3%
$PM_{2.5}$ Interval Site			
1 in 6 days			
SC – P*	59	61	96.7%
SC – C**	59	61	96.7%
TOTAL $PM_{2.5}$	118	122	96.7%

*Primary Sampler
** Collocated Sampler

Table 18: Data Completeness Summary

Pollutant	Number of Actual Samples	Number of Scheduled Samples	Data Completeness (Actual/Scheduled)
Ozone	52586	52677	99.8%
PM_{10}	230	244	94.3%
$PM_{2.5}$	118	122	96.7%
TOTAL	52934	53043	99.8%

EXCEEDANCE OF THE NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

Included in Table 19 is a summary of exceedances of the NAAQS during 2010.

Table 19: 2010 NAAQS Exceedances

Pollutant	Interval	Site	Concentration	Date
Ozone	1-Hour	None	-	-
	8-Hour	RM	0.081	6/22
			0.079	9/30
			0.079	6/23
			0.077	6/24
		SC	0.078	6/23
			0.076	6/22
		LE	0.080	9/30
		HS	0.076	6/22
			0.076	6/23
PM_{10}	24-Hour	None	-	-
	Annual	None	-	-
$PM_{2.5}$	24-Hour	None	-	-
	Annual	None	-	-

VIOLATIONS OF THE NATIONAL AMBIENT AIR QUALITY STANDARDS

Ozone (O_3)

Table 20: Violations of the 8-hour Ozone Standard

Site	2008 4th High (ppm)	2009 4th High (ppm)	2010 4th High (ppm)	3-Year Average of 4th High (ppm)
RM	0.081	0.072	0.077	0.076
SC	0.075	0.070	0.073	0.072
LE	0.081	0.070	0.070	0.074
HS	0.074	0.069	0.073	0.072

Particulates - PM_{10}

Table 21: Violations of the Twenty-Four Hour PM_{10} Standard

	2008		2009		2010		
Site	24-Hr Max (ug/m^3)	Expected Exceedances	24-Hr Max (ug/m^3)	Expected Exceedances	24-Hr Max (ug/m^3)	Expected Exceedances	Rate of Expected Exceedances
SC-P*	92	0	119	0	59	0	0.0
SC-C**	79	0	122	0	61	0	0.0
LE	97	0	124	0	55	0	0.0
HS	91	0	155	1	75	0	1.0

Table 22: Violations the Annual PM_{10} Standard

Site	2008 Annual Average (ug/m^3)	2009 Annual Average (ug/m^3)	2010 Annual Average (ug/m^3)	Three-Year Average (ug/m^3)
SC-P*	34.9	39.7	26.5	33.7
SC-C**	34.7	39.9	26.2	33.6
LE	28.7	33.3	25.0	29.0
HS	39.8	42.1	31.2	37.7

Particulates – $PM_{2.5}$

Table 23: Violations of the Twenty-Four Hour $PM_{2.5}$ Standard

Site	2008 Annual 98^{th} Percentile (ug/m^3)	2009 Annual 98^{th} Percentile (ug/m^3)	2010 Annual 98^{th} Percentile (ug/m^3)	Three-Year Average 98^{th} Percentile (ug/m^3)
SC-P*	14.7	10.5	9.1	11.4

Table 24: Violations the Annual $PM_{2.5}$ Standard

Site	2008 Annual Average (ug/m^3)	2009 Annual Average (ug/m^3)	2010 Annual Average (ug/m^3)	Three-Year Average (ug/m^3)
SC-P*	7.2	6.3	5.4	6.3

*Primary Sampler
** Collocated Sampler

SPECIAL PROJECTS AND NETWORK CHANGES

The following is a list of projects and network changes that occurred during 2010.

Seasonal Monitors:

- Ozone seasonal monitoring was operated at Lehi (LE) and High School (HS) site April 1 to November 1.

Special Projects:

- Conducted PM10 Special Monitoring for SRPMIC Community for fugitive dust complaint from agricultural cotton harvest at one location in December 11 – 20, 2010.

Network Changes:

- Exchanged to upgrade the monitoring shelter at Red Mountain Air Monitoring Station February 11 to Apr 22, 2010. The ozone and meteorological monitoring data was affected during that period.

- Installed new data logger ESC Model 8832 at Lehi Air Monitoring Station in January 15, 2010.

- Installed new data logger ESC Model 8832 at Senior Center Air Monitoring Station in January 27, 2010.

- Installed new data logger ESC Model 8832 at Red Mountain Air Monitoring Station in April 13, 2010.

- Installed new meteorological tower (Climatronics) at Red Mountain Air Monitoring Station in May 11, 2010.

- Replaced wind monitor at Lehi Air Monitoring Station in August 31, 2010.

Consideration of Additional Monitors:

- The SRPMIC is currently running a PM_{10} continuous sampler TEOM 1400AB at Senior Center site that eventually will be the primary sampler from the designated PM_{10} and $PM_{2.5}$ collocated site.

- New PM_{10} continuous sampler Thermo 1405 is planned to be exchange with the current sampler R&P FRM2000 at the High School site.

- Upgrades to ozone monitoring are planned in High School, Red Mountain and Lehi air stations on QA/QC checks to implement ozone transfer standards and zero air supply.

- Projected changes at Senior Center air station include exchanging the monitoring shelter and the meteorological tower.

EPA Audits/Data Submittals:

- EPA PM2.5 PEP Audits conducted: Feb 17, 2010, May 8, 2010, May 14, 2010, July 25, 2010 and Oct 23, 2010 all at Senior Center Air Monitoring Station.
  Ozone Audit conducted April 15, 2010 at Senior Center Air Monitoring Station.

- EPA AQS data submittal transitioned to AQS National Environmental Information Exchange Network (NEIEN) utilizing SRPMIC node along with establishing the EI to EIS process in NEIEN node. First AQS NEIEN data submission was March 17, 2010.

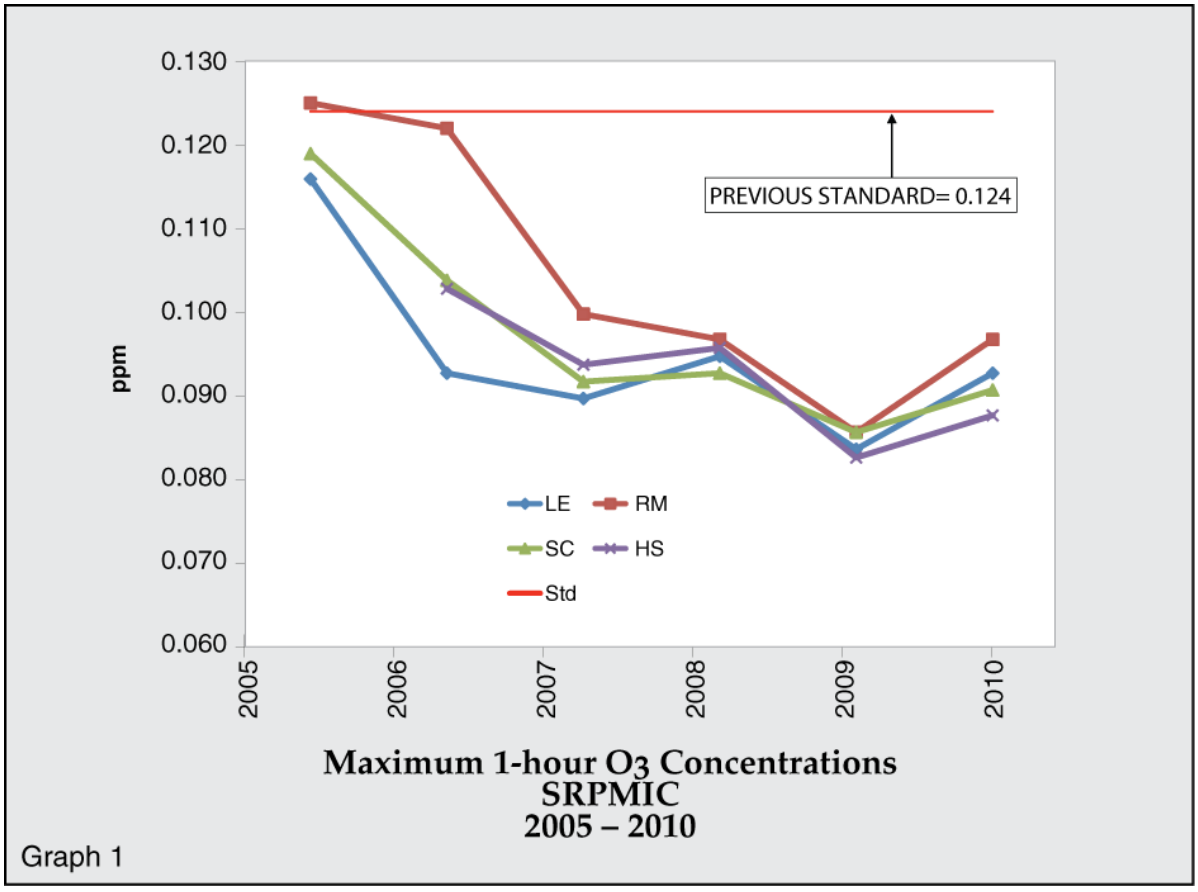
TRENDS

The air quality in the Phoenix Metropolitan Area is generally improving despite the tremendous growth experienced in the region. Since monitoring began in the 1960s, ambient concentrations for most of the criteria pollutants have been reduced to below the NAAQS. Graphs of the trends seen in those criteria pollutants that are monitored on the SRPMIC are illustrated in Graphs 1 through 7.

Ozone (O_3)

One-Hour Concentrations

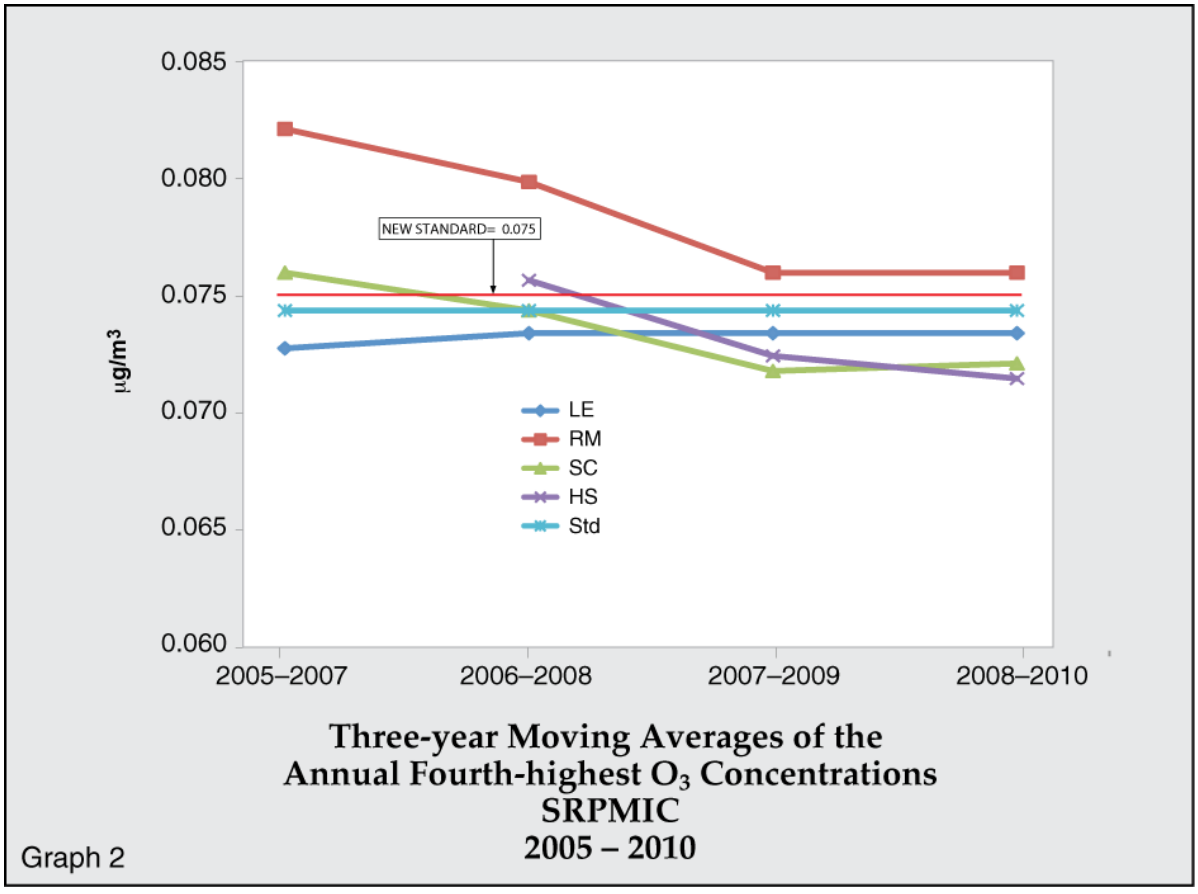
Maximum 1-hour concentrations of O_3 at the SRPMIC monitoring locations have shown a general decline since 2005 with a small increase occurring during 2010. Between 2005 and 2010, maximum concentrations have decreased approximately 20%. A graph of the maximum one-hour concentration is provided in Graph 1.



Graph 1

Eight-Hour Concentrations

Eight-hour average concentrations of O_3 at the SRPMIC monitoring locations have either shown a steady decline or have remained stable. The three-year moving averages of the fourth-highest 8-hour concentration at the four locations are illustrated in Graph 2. With the exception of the Lehi (LE) location, the decline in the concentrations has been relatively uniform among the locations.



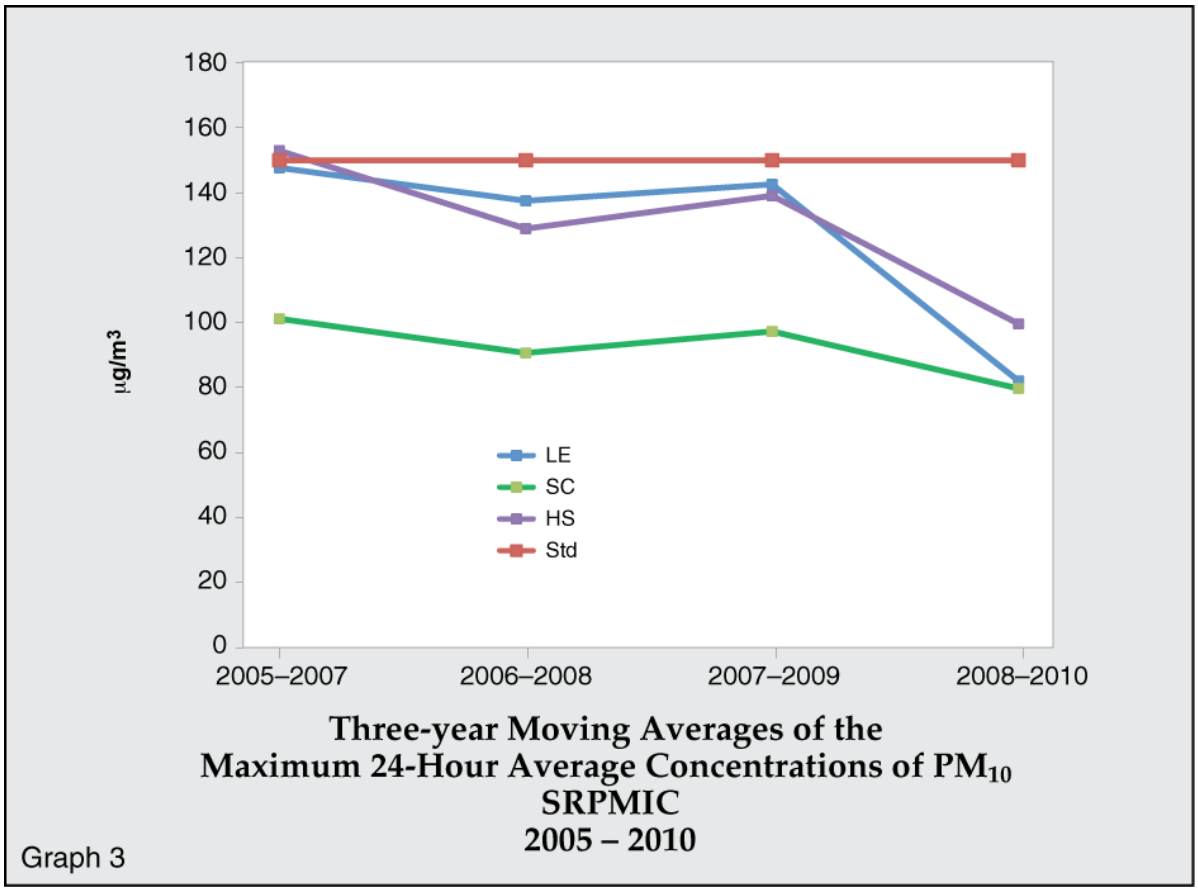
Three-year Moving Averages of the Annual Fourth-highest O_3 Concentrations SRPMIC 2005 – 2010

Graph 2

Particulate Matter (PM_{10})

Twenty-Four Hour Concentrations

Maximum twenty-four hour average concentrations of PM_{10} at the three monitoring locations have fluctuated around the 24-hour standard since 2005. During 2007, two of the sites had an exceedance of the standard; during 2009, one site had an exceedance. The three-year moving averages of the maximum 24-hour concentrations have remained below the standard since 2006. A graph of the trend is provided in Graph 3.

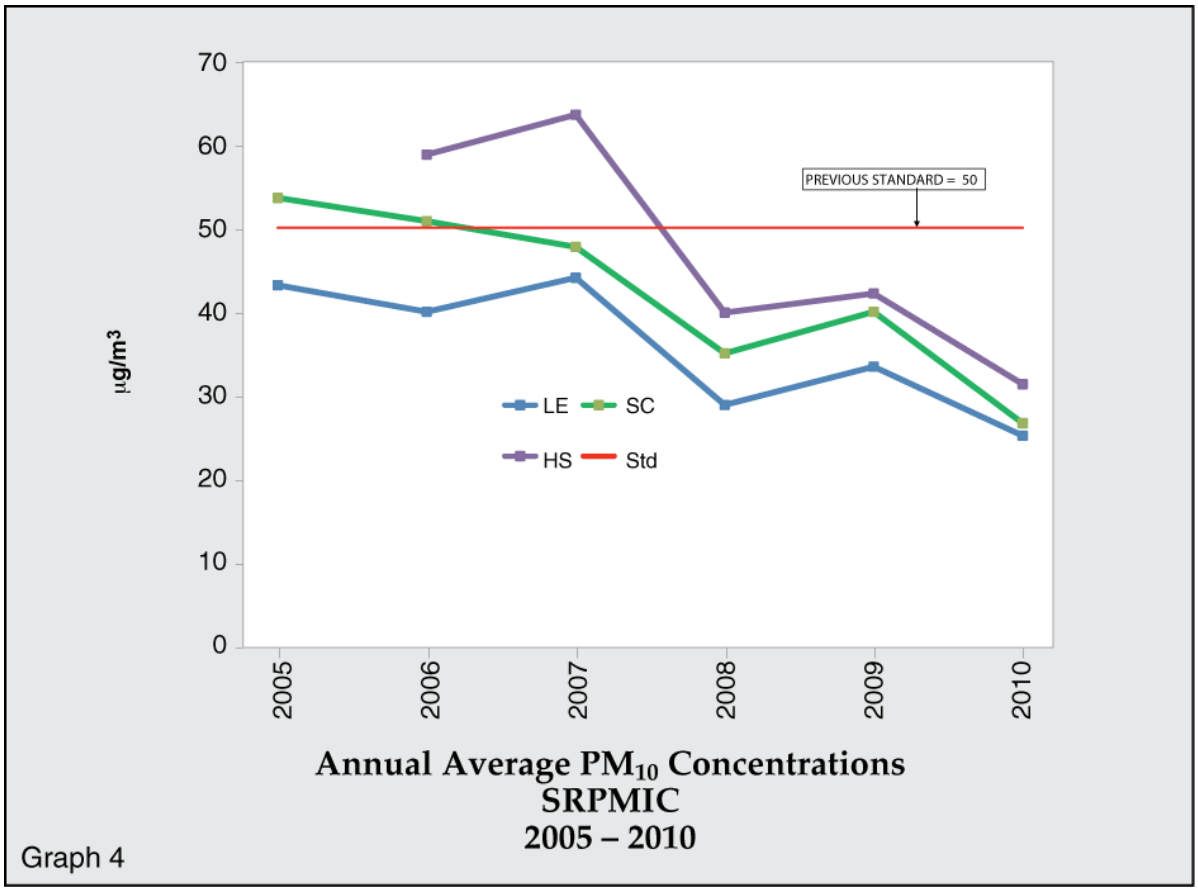


Three-year Moving Averages of the Maximum 24-Hour Average Concentrations of PM_{10} SRPMIC 2005 – 2010

Graph 3

Annual Concentrations

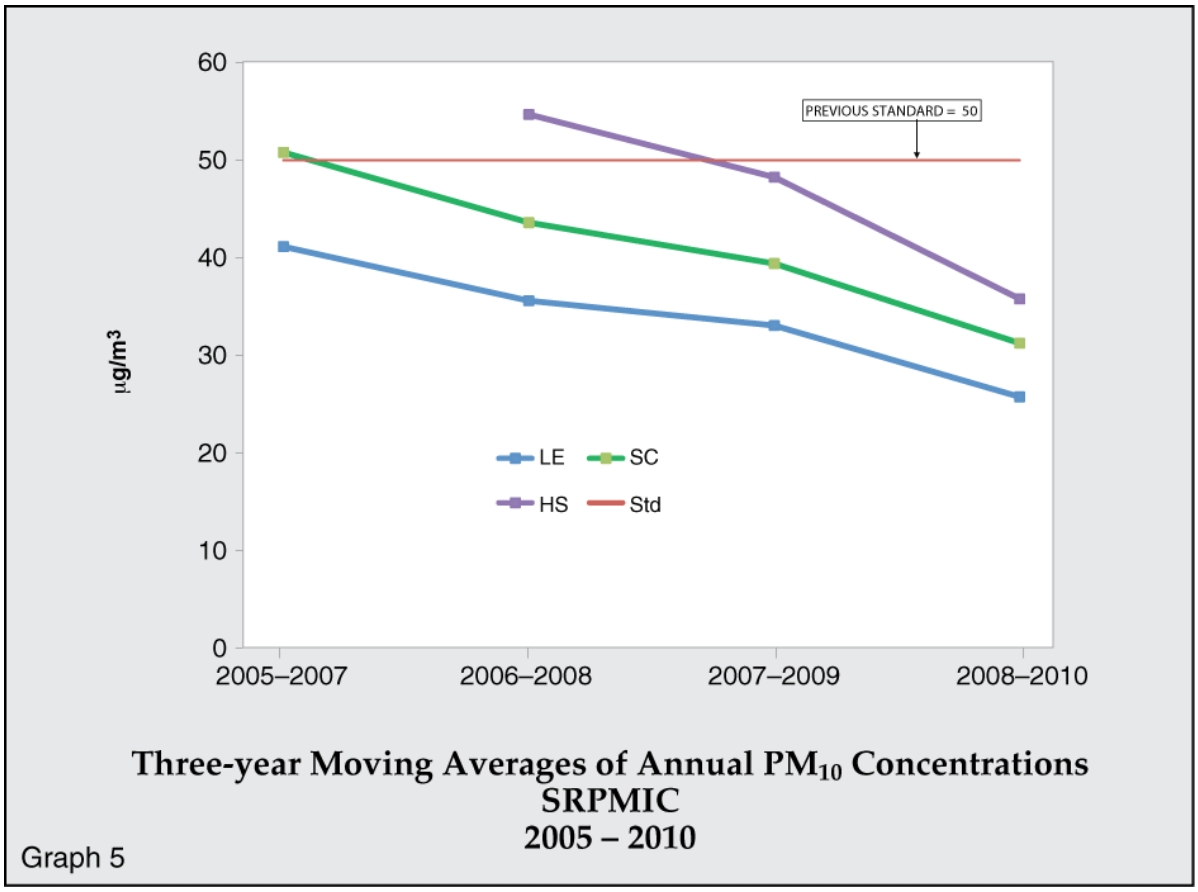
Annual average concentrations of PM_{10} at the SRPMIC locations have shown a general decline since 2005, although slight increases occurred during 2007 and 2009. There has been no exceedance of the previous annual standard since 2008; a graph is presented in Graph 4.



Annual Average PM_{10} Concentrations
SRPMIC
2005 – 2010

Graph 4

A graph of the three-year moving averages of the annual PM_{10} concentrations is provided in Graph 5.



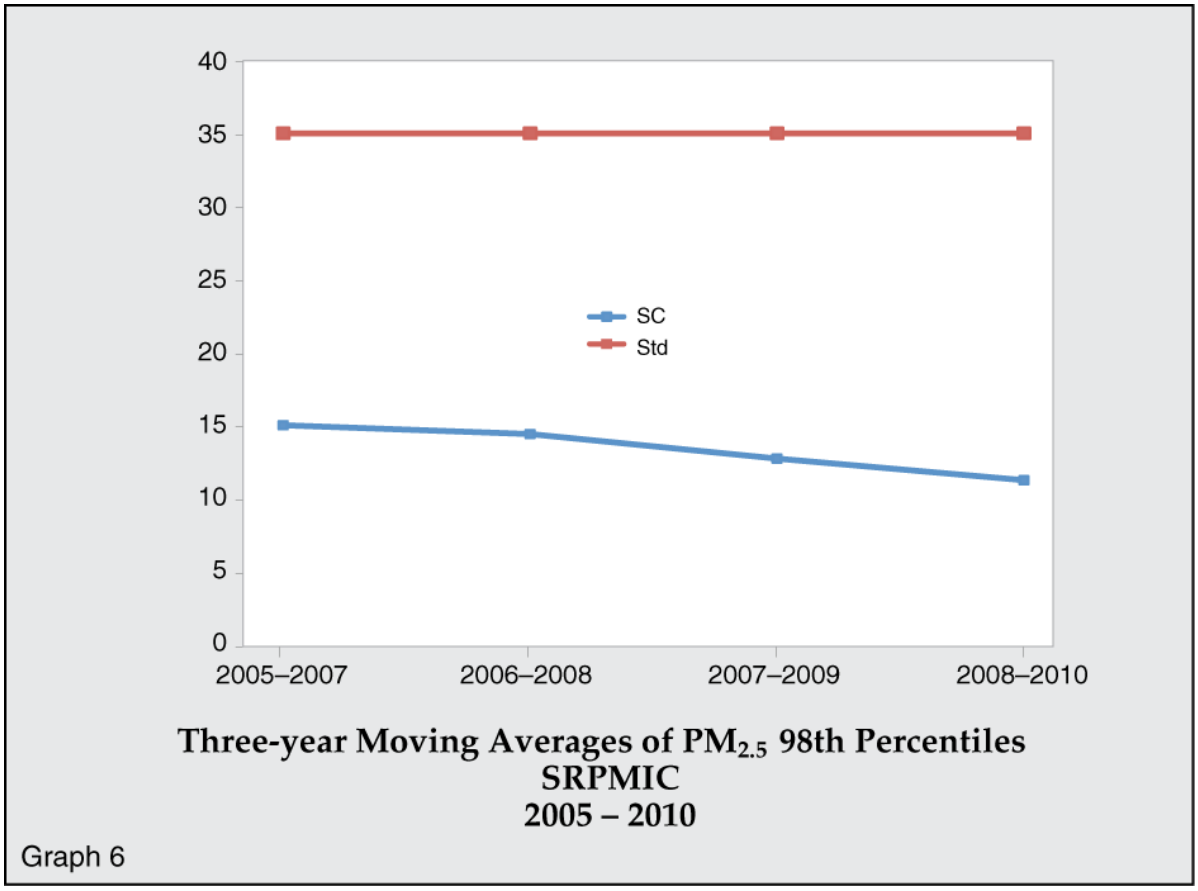
Three-year Moving Averages of Annual PM_{10} Concentrations
SRPMIC
2005 – 2010

Graph 5

Particulate Matter ($PM_{2.5}$)

98th Percentiles

Concentrations of $PM_{2.5}$ are well below the standard. A graph of the three-year moving averages of the 98th percentile of the 24-hour average concentrations is provided in Graph 6. Data collected during 2007 was included in the moving averages although data recovery for that year was less than 75%.

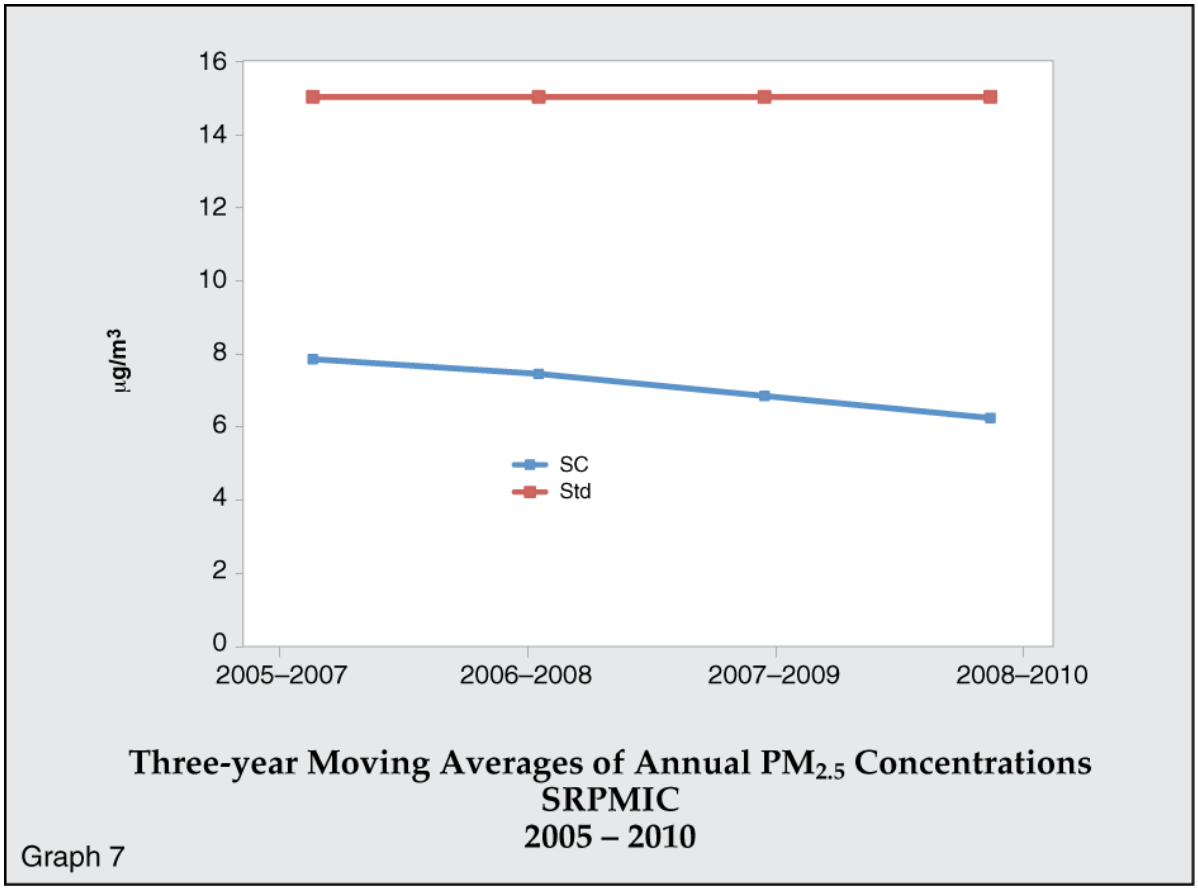


Three-year Moving Averages of $PM_{2.5}$ 98th Percentiles
SRPMIC
2005 – 2010

Graph 6

Annual Concentrations

Annual average concentrations of $PM_{2.5}$ at the SRPMIC locations have shown a general decline since 2005. A graph of the three-year moving averages of the annual $PM_{2.5}$ concentrations is provided in Graph 7. Data collected during 2007 was included in the moving averages although data recovery for that year was less than 75%.



Three-year Moving Averages of Annual $PM_{2.5}$ Concentrations
SRPMIC
2005 – 2010

Graph 7

SITE DESCRIPTIONS

Senior Center (SC)

Salt River Pima-Maricopa Indian Community - Senior Center Air Monitoring Station

Location: 10844 East Osborn Road, Scottsdale, AZ 85256
Scale of Representative: Neighborhood Scale
Monitoring Objective: High Pollution Exposure
EPA Site ID: 04 013 7020

Site Description: The Senior Center (SC) site was relocated from the Desert Eagle Secondary School air station and began operations in October 2004. The site is located just west of the Senior Service Center at the northeast section of Osborn Road and Alma School Road approximate less than half mile from Two Waters Administration Complex. The site is situated in the midst of neighborhood homes with agricultural fields to the south and sparse open fields to the north.

The criteria pollutants of ozone and particulate matters of PM_{10} and the $PM_{2.5}$ are monitored at this station. The network design for the PM_{10} and $PM_{2.5}$ monitoring is established as primary and collocated sample measurement. The meteorological parameter of wind speed, wind direction, atmospheric pressure, relative humidity, precipitation and the ambient temperature measurement are also monitored at this site. The data acquisition network of hourly data reports is in-house along with the ozone monitor and calibration monitors.

Senior Center (SC)

Parameter	Instrument #1	Instrument #2 and #3	Instrument #4 and #5	Instrument #6	Instrument #6	Instrument #7	Instrument #8
Pollutant Type	Ozone	PM_{10} Primary/ Collocated	$PM_{2.5}$ Primary/ Collocated	Wind Monitor	Temperature/Relative Humidity	Pressure	Precipitation
Date Established	Oct 2004	May 2004	May 2004	Jan 2005	Jan 2005	Jan 2005	Jan 2005
Sampler Make/Model	Thermo 49C	R&P FRM 2000	R&P FRM 2000	RM Young 05305 AQ	RM Young 41382	RM Young 61202V	Climatronics 525
Classification	SLAMS	SLAMS	SLAMS	n/a	n/a	n/a	n/a
Scale	Neighborhood	Neighborhood	Neighborhood	n/a	n/a	n/a	n/a
Objective	Population / Transport	Population / Transport	Population / Transport	n/a	n/a	n/a	n/a
Inlet Height	4.2 meters	3 meters	3 meters	10 meters	2.1 meters	2.1 meters	3 meters
Distant from Tree Dripline	15.2 meters	14.2 meter	14.2 meters	14 meters	14 meters	14 meters	15 meters
Obstacle Description	Shelter	Platform	Platform	Tower	Tower	Tower	Tower
Airflow Arch	360	360	360	360	360	360	360
Nearest Road	Osborn Road	Osborn Road	Osborn Road	Osborn Road	Osborn Road	Osborn Road	Osborn Road
Distant / Direction to Road	35 meters / South	21 meters / South	21 meters / South	35 meters / South	35 meters / South	35 meters / South	21 meters / South
Distant between Collocated Samplers	n/a	2 meters	2 meters	n/a	n/a	n/a	n/a
Schedule	Continuous	1 in 6 Days	1 in 6 Days	Continuous	Continuous	Continuous	Continuous
Probe Material	Stainless Steel	n/a	n/a	n/a	RTD / Intercap	n/a	Tipping Bucket
Residence Time	> 20 seconds	n/a	n/a	n/a	n/a	n/a	n/a
Surround Area	Residential	Residential	Residential	Residential	Residential	Residential	Residential
Site Ground cover	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel
Frequency of QC check	Bi-weekly	Bi-weekly	Bi-weekly	n/a	n/a	n/a	n/a
Frequency of flow verification	n/a	Monthly	Monthly	n/a	n/a	n/a	n/a
Frequency of audit	Quarterly	Quarterly	Quarterly	Twice Annually	Twice Annually	Twice Annually	n/a

Red Mountain (RM)

Salt River Pima-Maricopa Indian Community – Red Mountain Air Monitoring Station

Location: 15115 Beeline Highway, Scottsdale, AZ 85256
Scale of Representative: Urban and Regional Scale
Monitoring Objective: High Downwind Concentrations
EPA Site ID: 04 013 7020

Site Description: The monitoring site is located approximately 300 feet south of old Red Mountain Trap & Sheet building. The Trap and Skeet facility was closed however it use to provide the RV hookups and with a full capacity during the winter months. A large portion of the area is open range populated with creosote scrubs and desert plants and it is approximately 1 mile southeast of State Highway 87 Beeline Highway. The monitoring station was established in the summer of 2002 and immediately began monitoring. In May 2010 the monitoring station was upgraded with new monitoring shelter, new meteorological tower and revamped the electrical connection.

This site is monitoring criteria pollutant ozone, to represent urban and regional scale. The meteorological system of wind speed, wind direction, atmospheric pressure, ambient temperature and relative humidity are also monitored at this station. The data acquisition instrument of hourly data reports is in-house along with ozone monitor and the calibration system.

Red Mountain (RM)

Parameter	Instrument #1	Instrument #2	Instrument #3	Instrument #4
Pollutant Type	Ozone	Wind Monitor	Temperature / Relative Humidity	Pressure
Date Established	May 2002	April 2002	April 2002	May 2003
Sampler Make/Model	Thermo 49C	RM Young 05305 AQ	RM Young 41382	RM Young 61202V
Classification	SLAMS	n/a	n/a	n/a
Scale	Urban / Regional	n/a	n/a	n/a
Objective	Downwind / Transport	n/a	n/a	n/a
Inlet Height	4.1 meters	10 meters	2.6 meters	2.5 meters
Distant from Tree Dripline	none	none	none	none
Obstacle Description	Shelter	Tower	Tower	Tower
Airflow Arch	360	360	360	180
Nearest Road	Beeline Highway	Beeline Highway	Beeline Highway	Beeline Highway
Distant / Direction to Road	1 mile / North	1 mile / North	1 mile / North	1 mile / North
Schedule	Continuous	Continuous	Continuous	Continuous
Probe Material	Stainless Steel	n/a	n/a	n/a
Residence Time	> 20 seconds	n/a	n/a	n/a
Surrounding Area	Trap & Skeet / Desert	Trap & Skeet / Desert	Trap & Skeet / Desert	
Site Groundcover	Gravel	Gravel	Gravel	Gravel
Frequency of QC check	Bi-weekly	n/a	n/a	n/a
Frequency of flow verification	n/a	n/a	n/a	n/a
Frequency of audit	Quarterly	Twice-annually	Twice-annually	Twice-annually

Lehi (LE)

Salt River Pima-Maricopa Indian Community - Lehi Air Monitoring Station

Location: 3250 North Stapley Drive, Mesa, AZ 85203
Scale of Representative: Neighborhood Scale
Monitoring Objective: High Pollution Exposure
EPA Site ID: 04 013 7022

Site Description: The Lehi monitoring site was situated primarily as ozone saturation studies during the summer months then developed into a monitoring station in January 2005. There are new Community developments such as Lehi Community Recreation Building diagonally across the intersection. The monitoring site is inside the Police/Fire Substation building and equipment is located on the roof for PM and meteorological monitoring. The site is bordered on the north and east by agricultural field, on the west by neighborhood homes, a Booster Pump Facility adjacently north and the Community Recreation directly south.

The SRPMIC monitors the ambient air quality particulate matter (PM_{10}) from this site and also monitors the meteorological system of wind speed, wind direction, relative humidity, barometric pressure, precipitation and ambient temperature along with data acquisition system. The criteria pollutant ozone (O_3) is monitored here as seasonal monitoring from April to October annually.

Lehi (LE)

Parameter	Instrument #1	Instrument #2	Instrument #3	Instrument #4	Instrument #5	Instrument #6
Pollutant Type	Ozone	PM_{10}	Wind Monitor	Temperature / RH	Pressure	Precipitation
Date Established	June 2004	January 2005	Dec 2005	Dec 2005	Dec 2005	Dec 2005
Sampler Make/Model	Teledyne 400E	R&P FRM 2000	RM Young 05305 AQ	RM Young 41382	RM Young 61202V	RM Young 52260
Classification	SLAMS	SLAMS	n/a	n/a	n/a	n/a
Scale	Neighborhood	Neighborhood	n/a	n/a	n/a	n/a
Objective	Population / Transport	Population / Transport	n/a	n/a	n/a	n/a
Inlet Height	6.7 meters	6.4 meters	9.5 meters	5 meters	5.1 meters	5.6 meters
Distant from Tree Dripline	10.4 meters	20 meters	12 meters	8 meters	10 meters	10 meters
Obstacle Description	Building	Building	Tower	Building side	Building	Building
Airflow Arch	360	360	360	360	360	360
Nearest Road	Stapley Drive	Stapley Drive	Stapley Drive	Stapley Drive	Stapley Drive	Stapley Drive
Distant / Direction to Road	18.3 meters / East	20.8 meters / East	17.7 meters / East	16.2 meters / East	18.9 meters / East	18.9 meters / East
Schedule	Continuous	1 in 6 Days	Continuous	Continuous	Continuous	Continuous
Probe Material	Stainless Steel	n/a	n/a	RTD / Intercap	n/a	Tipping Bucket
Residence Time	> 20 seconds	n/a	n/a	n/a	n/a	n/a
Surrounding Area	Residential / Agricultural	Residential / Agricultural	Residential / Agricultural	Residential / Agricultural	Residential / Agricultural	Residential / Agricultural
Site Groundcover	Pavement / gravel	Pavement / gravel	Pavement / gravel	Pavement / gravel	Pavement / gravel	Pavement / gravel
Frequency of QC check	Bi-weekly	Bi-weekly	n/a	n/a	n/a	n/a
Frequency of flow verification	n/a	Monthly	n/a	n/a	n/a	n/a
Frequency of audit	Quarterly	Quarterly	Twice-annually	Twice-annually	Twice-annually	n/a

High School (HS)

Salt River Pima-Maricopa Indian Community - High School Air Monitoring Station

Location: 4827 North Country Club Drive, Scottsdale, AZ 85256
Scale of Representation: Neighborhood Scale
Monitoring Objective: High Pollution Exposure
EPA Site ID: 04 013 7024

Site Description: The High School site is located on the property of Salt River High School in the annex of the Maintenance Electrical Facility room and on the roof. The site was established in April 2006 after relocating from Early Childhood Education Center air station because the ozone monitoring site did not meet the sitting criteria due to facility expansion to adjacent building. The site was operational since July 2002. This area is experienced rapid facility growth during this period including a new High School that commenced in the fall 2006, new developed Elementary School to the southeast, new residential homes constructed to the east, a new school ballpark to the east, and currently a proposed plan facility of Junior High School to the north. The Central Arizona Project Aqueduct canal borders along the north section and the surrounding area of open agricultural fields to the north and south.

Particulate matter (PM_{10}) is one of the criteria pollutant monitored at this site. The ozone seasonal monitoring is monitored from this facility April to October annually.

High School (HS)

Parameter	Instrument #1	Instrument #2
Pollutant Type	Ozone	PM_{10}
Date Established	May 2006	April 2006
Sampler Make/Model	Thermo 49C	R&P FRM 2000
Classification	SLAMS	SLAMS
Scale	Neighborhood	Neighborhood
Objective	Population / Transport	Population / Transport
Inlet Height	7.3 meters	6.8 meters
Distant from Tree Dripline	13.1 meters	14.6 meters
Obstacle Description	Building	Building
Airflow Arch	360	360
Nearest Road	Country Club Drive	Country Club Drive
Distant / Direction to Road	130 meters / West	128 meters / West
Schedule	Continuous	1 in 6 Days
Probe Material	Teflon	n/a
Residence Time	> 20 seconds	n/a
Surrounding Area	School Grounds / Agricultural	School Grounds / Agricultural
Site Groundcover	Pavement / Aggregate	Pavement / Aggregate
Frequency of QC check	Bi-weekly	Bi-weekly
Frequency of flow verification	n/a	Monthly
Frequency of audit	Quarterly	Quarterly